

Fluoride-Releasing Restorative Materials and Recurrent Caries (5/03)

Three restorative materials and topical fluoride gel used in xerostomic patients: A clinical comparison. Haveman CW, Summitt JB, Burgess JO, Carlson K. J Amer Dent Assoc 2003;134:177-184.

The purpose of this clinical study was to compare the clinical performance and recurrent caries associated with two fluoride-releasing glass-ionomer materials (Ketac-Fil and Vitremer Core, 3M ESPE, St. Paul, MN) and one non-fluoride releasing amalgam material (Tytin, Kerr, Orange, CA) used in Class 3 or 5 restorations in patients with a low salivary flow rate. Nine xerostomic patients received 111 restorations. The patients were instructed in the daily use of a neutral fluoride gel (PrevDent, Colgate, Canton, MA) and recalled at six months, one year and two years. The restorations were evaluated for marginal adaptation, anatomic form, caries in adjacent tooth structure and caries at the cavosurface margin. Patients were categorized as fluoride users (greater than 50% of the time) or nonusers (less than 50% of the time). Significantly less caries developed at the cavosurface margin of the fluoride-releasing glass-ionomer restorative materials compared with amalgam in patients who were less than 50 percent compliant in the daily use of topical fluoride gel. No caries developed within 3 millimeters of any of the restorations in fluoride users. No statistical significant difference was found between the three restorative materials in regard to marginal integrity and anatomical form. **Results suggest that fluoride-releasing glass-ionomer restorative materials may reduce caries surrounding restorations in high-risk patients who do not routinely use topical fluoride.**



DIS comment: Laboratory research confirms the ability of glass-ionomer restorative materials to reduce the demineralization of adjacent tooth structure.¹⁻³ However, conflicting clinical information exists concerning the reduction in recurrent caries rates surrounding glass-ionomer restorations.⁴⁻⁶ The authors speculate that a significant problem with clinical studies involving fluoride-releasing materials is that much of the research has not been completed on patients at high risk of developing caries and therefore, these materials have not been challenged severely enough to determine their effectiveness. However, a very recent study by McComb and others found similar results in xerostomic head-and-neck radiation patients with significant reduction in recurrent caries around both conventional and resin-modified glass-ionomer restorations over resin-composite restorations in patients not using topical fluoride⁷ (See DIS 67). The recharge ability of glass ionomers may be the most important factor in caries resistance. This study supports the continued use of glass-ionomer restorative materials in Class 3 or 5 restorations in non-compliant patients at high risk for caries.

References

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